SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SW-846 Method 8270

Table 1A. Summary of Holding Times and Preservation for Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Semivolatile Organic Compounds (SVOCs) in Water	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory; Technical and Contract for Analysis: 40 days from extraction	Cool to 4EC ±2EC;
SVOCs in Soil [b]	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory; Technical and Contract for Analysis: 40 days from extraction	Cool to 4EC ±2EC

[a] Individual target compounds are listed in Table 1B.
[b] Perform initial sample analysis using a 2-gram sample for mid-level analysis and a 30-gram sample for low-level analysis

Data Calculations and Reporting Units:

Use the mean RRF from the initial calibration to calculate the concentration of individual analytes according to Section 7.7.2 of EPA Method 8270C, Revision 3.0.

Report water sample results in concentration units of micrograms per liter (Fg/L). Report soil sample results on a dry-weight basis in micrograms per kilogram (Fg/kg). Report percent solid and percent moisture to the nearest whole percentage point.

For rounding results, adhere to the following rules:
a)If the number following those to be retained is less than 5, round down;
b)If the number following those to be retained is greater than 5, round up; or
c)If the number following the last digit to be retained is equal to 5, round down if the digit is even, or round up if the digit is odd.

All records of analysis and calculations must be legible and sufficient to recalculate all sample concentrations and QC results. Include an example calculation in the data package.

Table 1B: Target Compound List and Contract Required Quantitation Limits (CRQLs) for Semivolatile Organic Compounds (SVOCs) by SW-846 Method 8270

Analyte	Contract Required Quantitation Limits		PRGs	
	Water (Fg/L)	Soil (mg/kg)	Industrial Soil (mg/kg)	Tap Water (Fg/L)
1,2-Dichlorobenzene	10	0.33	370	370
1,2,4-Trichlorobenzene	10	0.33	1,700	190
1,3-Dichlorobenzene	10	0.33	140	180
1,4-Dichlorobenzene	10	0.33	7.3	0.47
2-Chloronaphthalene	10	0.33	NA	NA
2-Chlorophenol	10	0.33	240	38
2-Methylnaphthalene	10	0.33	NA	NA
2-Methylphenol	10	0.33	53,000	1,800
2-Nitroaniline	25	0.8	64	2.2
2-Nitrophenol	10	0.33	NA	NA
2,2'-oxybis (1-Chloropropane)	10	0.33	NA	NA
2,4-Dichlorophenol	10	0.33	3,200	110
2,4-Dimethylphenol	10	0.33	21,000	730
2,4-Dinitrophenol	25	0.8	2,100	73
2,4-Dinitrotoluene	10	0.33	2,100	73
2,4,5-Trichlorophenol	25	0.8	110,000	3,700
2,4,6-Trichlorophenol	10	0.33	270	6.1
2,6-Dinitrotoluene	10	0.33	1,100	37
3-Nitroaniline	25	0.8	NA	NA
3,3'-Dichlorobenzidine	10	0.33	6.7	0.15
4-Bromophenyl-phenylether	10	0.33	NA	NA
4-Chloro-3-methylphenol	10	0.33	NA	NA
4-Chloroaniline	10	0.33	4,300	150
4-Chlorophenyl-phenyl ether	10	0.33	NA	NA
4-Methylphenol	10	0.33	5,300	180
4-Nitroaniline	25	0.8	NA	NA
4-Nitrophenol	25	0.8	66,000	2,300
4,6-Dinitro-2-methylphenol	25	0.8	NA	NA
Acenaphthene	10	0.33	28,000	370
Acenaphthylene	10	0.33	NA	NA
Anthracene	10	0.33	220,000	1,800
Benzo(a)anthracene	10	0.33	3.6	0.092
Benzo(a)pyrene	10	0.33	0.36	0.0092
Benzo(b)fluoranthene	10	0.33	3.6	0.092
Benzo(g,h,i)perylene	10	0.33	NA	NA
Benzo(k)fluoranthene	10	0.33	36	0.92
bis(2-Chloroethoxy)-methane	10	0.33	NA	NA

Table 1B: Target Compound List and Contract Required Quantitation Limits (CRQLs) for Semivolatile Organic Compounds (SVOCs) by SW-846 Method 8270

Analyte	Contract Required Quantitation Limits		PRGs	
	Water (Fg/L)	Soil (mg/kg)	Industrial Soil (mg/kg)	Tap Water (Fg/L)
bis(2-Chloroethyl) ether	10	0.33	0.56	0.0098
bis(2-Ethylhexyl)phthalate	10	0.33	21	4.8
Butylbenzylphthalate	10	0.33	930	7,300
Carbazole	10	0.33	150	3.4
Chrysene	10	0.33	360	9.2
Di-n-butylphthalate	10	0.33	NA	NA
Di-n-octylphthalate	10	0.33	10,000	730
Dibenz(a,h)anthracene	10	0.33	0.36	0.0092
Dibenzofuran	10	0.33	3,200	24
Diethylphthalate	10	0.33	100,000	29,000
Dimethylphthalate	10	0.33	100,000	370,000
Fluoranthene	10	0.33	37,000	1,500
Fluorene	10	0.33	22,000	240
Hexachlorobenzene	10	0.33	1.9	0.042
Hexachlorobutadiene	10	0.33	38	0.86
Hexachlorocyclopentadiene	10	0.33	7,100	260
Hexachloroethane	10	0.33	210	4.8
Indeno(1,2,3-cd)pyrene	10	0.33	3.6	0.092
Isophorone	10	0.33	3,200	71
N-Nitroso-di-n-propylamine	10	0.33	0.43	0.0096
N-nitrosodiphenylamine	10	0.33	610	14
Naphthalene	10	0.33	190	6.2
Nitrobenzene	10	0.33	100	3.4
Pentachlorophenol	25	0.8	15	0.56
Phenanthrene	10	0.33	NA	NA
Phenol	10	0.33	100,000	22,000
Pyrene	10	0.33	26,000	180

Notes:

Fg/L = micrograms per liter.
mg/kg = milligrams per kilogram.
NA = Not available.
PRG = U.S. EPA Preliminary Remediation Goals, Region 9 May 1, 1998..

Table 2. Summary of Calibration Procedures for SVOCs by SW-846 Method 8270C

Calibration Element	Frequency	Acceptance Criteria	Corrective Action
GC/MS Tuning with decafluorotriphenyl-phosphine (DFTPP)	Beginning of each 12-hour period during which standards samples are analyzed	Ion abundance criteria in Table 3 of Method 8270C, Revision 3.0	1. Identify the problem. 2. MS tune criteria must be met before any calibration standards, samples, blanks, or QC samples are analyzed
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL)[a, b, c]	Initially; whenever required, due to failure of CCV	RSD for RRFs #30%; or correlation coefficient (r) generated by the linear regression must be 0.99 for all analytes	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Continuing Calibration Verification (CCV) [d]	Beginning of every 12-hour period, and end of run	%D between RRF of CCV and avg RRFs from ICAL #30%; or ±30% of true value for linear regressiion	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Integrated areas of Internal Standards	Each analysis	Area must be within -50 to 100 percent.	1. Re-analyze samples with internal standard -50 percent and greater than 100 percent
Retention time evaluation of all standard, surrogate, and sample analytes	Each analysis	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples out control limits

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio $5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.
[b] ICAL and continuing CAL standards must contain all target analytes listed in Table 1B.
[c] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.
[d] If some compounds are beyond the control limits of the CCV and these target compounds are detected in samples and 10 percent or less of these analytes are beyond control limits, a single point calibration may be used to quantify the out-of-control analytes.

Table 3. Summary of Internal Quality Control Procedures for SVOCs by SW-846 Method 8270C

QC Element	Frequency	Acceptance Criteria [b]	Corrective Action
Method Blank (MB)	Each 12-hour time period, minimum of one per SDG [a]	< CRQL for each compound	1. Investigate the source of contamination and document. 2. Re-analyze all samples processed with a blank that is out of control.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG (1 MS/MSD set per 20 samples minimum)	Water Sample: MS and MSD recoveries and RPD between within laboratory limits Soil Sample: MS and MSD recoveries and RPD between within laboratory limits	1. Report in case narrative
Surrogate Spikes	Every sample, standard and method blank	Water Sample: Surrogate recoveries within laboratory limits Soil Sample: Surrogate recoveries within laboratory limits	1. Re-analyze all samples with non-compliant surrogate recoveries
Laboratory Control Sample (LCS)	One per SDG	Water Sample: LCS recoveries within laboratory limits Soil Sample: LCS recoveries within laboratory limits	1. Investigate the source of problem and document. 2. Re-analyze all samples processed with a LCS that is out of control.

[a] SDG - Sample Delivery Group - each case of field samples received; or each 20 field samples within a case; or each 14 calendar day period during which field samples in a case are received.
[b] within 3 sigma of laboratory control charts. The laboratory should submit the control charts.

Dilute and reanalyze samples which contain one or more target analytes at concentrations above the initial calibration range. Results for such reanalyses should fall within the mid-range of the calibration curve. Report results and submit documentation for both analyses.